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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/784,233	02/24/2004	Kie Y. Ahn	M4065.0216/P216-B	8349
24998	7590	10/26/2004	EXAMINER	
DICKSTEIN SHAPIRO MORIN & OSHINSKY LLP			CHAMBLISS, ALONZO	
2101 L STREET NW			ART UNIT	
WASHINGTON, DC 20037-1526			PAPER NUMBER	

2814

DATE MAILED: 10/26/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/784,233

Applicant(s)

AHN ET AL.

Examiner

Alonzo Chambliss

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 24 February 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-131 is/are pending in the application.
- 4a) Of the above claim(s) 1-58 and 86-131 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 59-85 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 24 February 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 2/24/04.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

### **DETAILED ACTION**

1. The pre-amendment filed on 2/24/04, which canceled claims 1-58 and 86-131 has been fully considered and made of record in the instant application.

### ***Information Disclosure Statement***

2. The information disclosure statement (IDS) submitted on 2/24/04 was filed before the mailing date of the non-final rejection on 10/17/04. The submission is in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statement is being considered by the examiner.

### ***Drawings***

3. The formal drawings filed on 2/24/04 have been approved by the examiner.

### ***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation

under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

5. Claims 59-66 are rejected under 35 U.S.C. 103(a) as being unpatentable over Endoh et al. (U.S. 5,374,788) in view of Ball et al. (U.S. 6,246,112), Panicker (U.S. 5,089,881), and Carey (U.S. 5,272,600).

With respect to Claims 59 and 75, Endoh discloses a substrate 1 having a through-hole 2, wherein the substrate 1 further comprising a top side and a bottom side a multi-layer structure interposed 3-7 on both sides of the substrate 1 and passing through the through-hole 2. The multi-layer structure 3-7 comprising a conductive plane 3, 4 and a signal wiring layer 6, 7, wherein the conductive plane 3, 4 and the signal wiring layer 6 having a signal line, 7 having an insulating layer 5 interposed between them (see col. 3 lines 5-49; Figs. 1-16). Endoh fails to disclose a processor coupled to a memory device residing on a common substrate. However, Ball discloses a processor coupled to a memory device residing on a common substrate (see col. 1 lines 10-19, col. 4 lines 63-67, and col. 5 lines 1-59; Figs. 3-8). Thus, Endoh and Ball have substantially the same environment of multi-layer substrate. Therefore, it would have been obvious to one skilled in the art at the time of the invention to incorporate a processor coupled to a memory device on the substrate of Endoh, since the processor and memory device would provide a stable memory system on the substrate for a computer as taught by Ball.

With respect to Claim 60, 63, 64, 83, and 84, Endoh discloses the conductive plane 3, 4 made of copper (see col. 3 lines 20-30). It is well known to one skilled in the art that the conductive plane 3, 4 made of copper can be utilized as a first ground plane and a power supply distribution plane, since the characteristic of the copper material would allow for grounding or power.

With respect to Claims 61, 62, 74, 76, 78 Endoh discloses a ground plane having a thickness and a width (see Fig. 1). Note that the specification contains no disclosure of either the critical nature of a ground plane that is at least 3 micrometers but less than 5 micrometers thick and a width of 6 to 10 micrometers or any unexpected results arising therefrom. Where patentability is said to be based upon particular chosen dimensions or upon another variable recited in a claim, the Applicant must show that the chosen dimensions are critical. In re Woodruff, 919 F.2d 1575, 1578, 16USPQ2d 1934, 1936 (Fed. Cir. 1990).

With respect to Claim 65, it is well known in the semiconductor industry to substitute aluminum for copper as a ground material as evident by Panicker (see col. 9 lines 29-31).

With respect to Claim 66, Endoh discloses wherein the multi-layer structure 3-7 further comprises a first insulating layer provided on the side said multi-layer structure directly adjacent to the substrate (see col. 7 lines 48-52 and col. 8 lines 1-4).

With respect to Claims 67, 73, 77, and 80-82, Endoh discloses wherein the first insulating layer comprises a epoxy (see col. 3 lines 42-44). It is well known in the

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semiconductor industry to substitute an silicon dioxide or polyimide for epoxy dielectric material as evident by Carey (see col. 7 lines 57-60).

With respect to Claim 68, Endoh discloses an epoxy material having a thickness (see Fig. 1). Note that the specification contains no disclosure of either the critical nature of a silicon dioxide layer having a thickness of .1 to .5 micrometers or any unexpected results arising therefrom. Where patentability is said to be based upon particular chosen dimensions or upon another variable recited in a claim, the Applicant must show that the chosen dimensions are critical. In re Woodruff, 919 F.2d 1575, 1578, 16USPQ2d 1934, 1936 (Fed. Cir. 1990).

With respect to Claim 69, Endoh discloses the conductive plane is deposited over the first insulating layer (see col. 7 lines 48-52 and col. 8 lines 1-4).

With respect to Claims 70-72, and 85, Endoh discloses the claimed invention except for wherein the insulating layer comprises a second insulating layer formed over the conductive plane, a third insulating layer formed over the signal wiring layer, a second conductive plane formed over the third insulating layer, and a fourth insulating layer formed over the second conductive plane. It would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate a second, third, and fourth insulating layers and a signal wiring layer, since it has been held that mere duplication of the essential working parts of a device involves only routine skill in the art. *St. Regis Paper Co. v. Bemis Co.*, 193 USPQ 8.

With respect to Claim 79, Ball discloses wherein the least one signal line is terminated at a bond pad (i.e. land (see col. 4 lines 20-48).

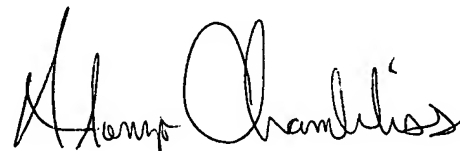
The prior art made of record and not relied upon is cited primarily to show the product of the instant invention.

**Conclusion**

6. Any inquiry concerning the communication or earlier communications from the examiner should be directed to Alonzo Chambliss whose telephone number is (571) 272-1927. The fax phone number for this Group is (703) 308-7722 or 7724.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 308-7956

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PMR or Public PMR. Status information for unpublished applications is available through Private PMR only. For more information about the PMR system see <http://pair-dkect.uspto.gov>. Should you have questions on access to the Private PMR system contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free) or [EBC\\_Support@uspto.gov](mailto:EBC_Support@uspto.gov).

A handwritten signature in black ink, appearing to read 'Alonzo Chambliss', is written in a cursive style.

Alonzo Chambliss  
Primary Patent Examiner  
Art Unit 2814

AC/October 18, 2004